



**FAA Contract # DTFAC-06-C-00003**

**Research & Development of  
Commercial Off The Shelf (COTS)  
Health and Usage Monitoring Systems  
(HUMS)  
Ground-Based Station (GBS)  
Assessment and Guidance Development**

**Robert L. Robinson  
Goodrich FUS – Vergennes, VT**

- **Objective:**
  - **Assess a COTS HUMS GBS IAW Advisory Circular AC-29-2C, Section MG-15.**
- **Goal:**
  - **Develop and Validate a process for certifying a COTS HUMS GBS for CBM credit.**
  - **Focus is on Independent Verification of a GBS-based Structural Usage algorithm.**
  - **Provide suggested means of compliance based upon actual experience.**

- **HUMS Hardware and Software Functionality Assessment.**
- **Develop COTS Validation Criteria**
  - **Research will concentrate on establishing an independent verification technique for the COTS software portions of the Ground Station while validating the output of a Ground-Station-based Structural Usage algorithm.**
  - **Variation of dissimilar software technique outlined in RTCA/DO-178B.**

- **Parallel Windows- and Linux-Based Software development.**
  - **Identical software, compiled and executed in its respective Operating System, using identical input conditions.**
  - **Deviation in output will determine extent of COTS validation issues.**
- **Develop HUMS COTS Process Guidance**
  - **Will provide guidelines to assist organizations interested in meeting the criteria found in AC-29-2C Section MG-15.**

- **Project still in initial phase (started 3/1/2006)**
- **Detailed Work Plan and Oral Presentation Completed.**
- **Budget / Expenditures (as of 5/31/06):**
  - **2006: \$ 51,804 / \$ 25,025**
  - **2007: \$ 166,604 / --**
- **Notes:**
  - **Total Contract: \$218,408**
  - **Funding to date: \$156,176**
  - **To Be Funded: \$62,232**

- **None at this time.**

- **Detailed Work Plan (DWP) has been submitted.**
- **DWP Oral Presentation is complete.**
- **Software requirements are under development.**
- **HUMS Functionality Assessment is underway.**

- **Project is in the early stages. There are no recommendations at this time.**



- **Complete HUMS Functionality Assessment.**
- **Complete Software Requirements for Structural Usage and Parallel SW Development.**
- **Design and Code SU software.**
- **Construct Verification Suite.**
- **Verify both systems using identical input conditions.**
- **Document Verification Results.**
- **Develop Validation Criteria and COTS Process Guidance resulting from the research.**

- **Questions and Discussion...**

**FAA Contract # DTFAC-06-C-00003**

**Research & Development of  
Commercial Off The Shelf (COTS)  
Health and Usage Monitoring Systems  
(HUMS)  
Ground-Based Station (GBS)  
Assessment and Guidance Development**

**Robert L. Robinson  
Goodrich FUS – Vergennes, VT**